

06/30/00
JC853 U.S. PTO

07-03-00

A

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Chee H. Chew, Kathryn L. Parker and Elizabeth A. Bastiaanse
Docket: 40062.63US01
Title: METHOD AND SYSTEM FOR USER SESSIONS ON PERSONAL ELECTRONIC DEVICES

JC852 U.S. PTO
09/608705
06/30/00

CERTIFICATE UNDER 37 CFR 1.10
'Express Mail' mailing label number: EL626731485US
Date of Deposit: June 30, 2000
I hereby certify that this paper or fee is being deposited with the United States Postal Service 'Express Mail Post Office To Addressee' service under 37 CFR 1.10 and is addressed to the Assistant Commissioner for Patents, Washington, D C. 20231.
By: Janice Kniep
Name: Janice Kniep

BOX PATENT APPLICATION
Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

We are transmitting herewith the attached:

- ☒ Transmittal sheet, in duplicate, containing Certificate under 37 CFR 1.10.
- ☒ Utility Patent Application: Spec. 12 pgs; 23 claims; Abstract 1 pg.
- ☒ 5 sheets of formal drawings
- ☒ An unsigned Combined Declaration and Power of Attorney
- ☒ Return postcard
- ☒ **PAYMENT OF THE FILING FEE IS BEING DEFERRED.**

MERCHANT & GOULD P.C.
P.O. Box 2903, Minneapolis, MN 55402-0903
(612) 332-5300

By: [Signature]
Name: John W. Branch
Reg. No.: 41,633
Initials: JWB/jk



**METHOD AND SYSTEM FOR USER SESSIONS ON PERSONAL
ELECTRONIC DEVICES**

Technical Field

5 The present invention relates to a personal electronic device, and particularly to a handheld computing device. More particularly still, the present invention relates to determining when a current user session is over so that a default state for an application running on a relatively small computing device will be displayed for a new user session.

10 **Background of the Invention**

Small, handheld electronic computing devices have been steadily growing in popularity in recent years. The devices are known by different names, such as palmtops, pocket computers, personal digital assistants, personal electronic organizers, hand held PCs (H/PCs), or the like. These devices, hereinafter "small
15 computing devices," provide much of the same functionality as their larger counterparts. In particular, the small computing devices enable a user to perform word processing, task management, spreadsheet processing, address book functions and email functions, as well as many other functions.

In the past, a small computing device has persistently displayed the last
20 viewed state of an application when the device was either cycled through on-off-on states or a particular application was accessed after an extended interval of inactivity. Although the user might be prompted to log in again after cycling the states of the device or extended intervals of inactivity, the prior art has not provided for "resetting" an application to a particular default state/view.

25 There are some scenarios where it would be preferable to display a default state for an application running on a small electronic device instead of the last displayed state. For example, when a small computing device is turned off for more

than 24 hours, a current user session for the device is probably over. When the device is eventually turned on again, the user typically wants to start a new user session to complete a new task that may be significantly different than the task performed in the last user session. In this case, navigation to a particular application to complete the new task could be made easier if all of the applications on the device were displayed in their default states for the new user session.

Also, when a small computing device is turned "on" and applications running on the device have not been selected for an extended period of time e.g., one hour or more, it might be preferable for these applications to return to their default states. Although a small computing device can be left turned "on" in a charging cradle for extended periods of time without user interaction, the last state of each application on the device may not be preferred when a new user session is eventually started to solve another task at a later time.

A more complete appreciation of the invention and its improvements can be obtained by reference to the accompanying drawings, which are briefly summarized below, to the following detail description of presently preferred embodiments of the invention, and to the appended claims.

Summary of the Invention

In accordance with the invention, the above and other problems are solved by determining when a current user session has ended on a computing device and enabling each application running on the device to display a default state or preferred view when a new user session is started. When an application is selected, an amount of time, since a last interaction with the application, is determined and compared to an interval of time associated with a current user session for the application. If the determined amount of time is greater than the interval of time associated with the current user session for the application, the current user session is ended and a new user session is started for the selected application. The default state of the selected application is displayed on the computing device when the new user session for the selected application is started.

In accordance with other aspects of the invention, each application running on the computing device can be associated with a separate current user session and a separate interval of time that represents a maximum period of inactivity for the selected application. The interval of time may be editable for each application.

In accordance with still other aspects of the invention, when a switch for the computing device is transitioned to an on state, an amount of time between a last transition of the switch to an off state or the automatic transition of the computing device to the off state and a current transition of the switch to the on state is determined. The determined amount of time is compared with a segment of time that is associated with a current user session for the switch. If the determined amount of time is greater than the segment of time associated with the current user session for the switch, the current user session for each application is ended and a new user session for the switch is started. When the application is selected after the new user session is started for the switch, the preferred view of the default state of the selected application will be displayed on the computing device and a new user session will be started for the selected application. It is envisioned that a switch may be employed to control the power for the computing device and/or control a function such as automatically displaying an application associated with the switch.

In accordance with yet other aspects of the invention, a length of the segment of time can be automatically adjusted in proportion to a frequency of operation of the switch. The length of the segment of time can be increased when the frequency of the operation of the switch is greater than a defined value. Also, the length of the segment of time can be decreased when the frequency of the operation of the switch is greater than a defined value.

In accordance with still other aspects of the invention, a time stamp is generated for each selection of each application and another time stamp is generated for each transition of the switch between the on state and the off state.

In accordance with other aspects of the invention, each application may be associated with a separate priority value that is employed to determine when to

stop running each application during a period of inactivity based on a plurality of characteristics. A frequency of interaction with a particular application is one characteristic that can be employed to dynamically change the priority value associated with the particular application. The priority value associated with the particular application may be increased when a high frequency of interaction occurs. Similarly, the priority value associated with the particular application may be decreased when a low frequency of interaction occurs.

The invention may be implemented as a computer process, a computing system or as an article of manufacture such as a computer program product or computer readable medium. The computer program product may be a computer storage medium readable by a computer system and encoding a computer program of instructions for executing a computer process. The computer program product may also be a propagated signal on a carrier readable by a computing system and encoding a computer program of instructions for executing a computer process.

These and other features as well as advantages, which characterize the invention, will be apparent from a reading of the following detailed description and a review of the associated drawings.

Brief Description of the Drawings

FIGURE 1 shows a block diagram of a small computing device used in an embodiment of the invention;

FIGURE 2 is a flow diagram illustrating the operational characteristics for determining if a current user session is over when the small computing device is turned on;

FIGURE 3 is a flow diagram showing the operational characteristics for determining if a current user session is over when an application is selected;

FIGURE 4 is a flow diagram illustrating the operational characteristics for determining the default state for an exemplary calendar application;

FIGURE 5 is a flow diagram showing the operational characteristics for generating time stamps;

FIGURE 6 is a flow diagram illustrating the operational characteristics for employing time stamps to determine when a current user session is over; and

FIGURE 7 is a table listing exemplary applications and their respective default states.

5 **Detailed Description of the Preferred Embodiment**

 An embodiment of the invention provides for creating separate user sessions for each application running on a small computing device, monitoring each interaction with the device and determining when a current user session is over based on a comparison between a defined period of inactivity and the amount of time since a
10 last interaction occurred. Once a current user session is determined to be over for an application running on the device, a default state for the application will be displayed the next time the application is selected and a new user session will be created at that time. The invention compares the amount of time between a last interaction and a predetermined interval of inactivity to determine when a current user session is over
15 for a particular application regardless of whether or not the small computing device is turned "on" or "off." Additionally, when a switch for controlling the small computing device transitions to an on state after an amount of time greater than a predetermined interval of inactivity associated with the switch, each current user session for each application is terminated and a new user session is created for each
20 application when each application is selected. The switch may control the power for the small computing device and/or cause the automatic display of an application associated with the switch.

 The logical operations of the various embodiments of the invention are implemented (1) as a sequence of computer implemented actions or program modules
25 running on a small computing device; and/or (2) as interconnected hardware or logic modules within the small computing device. The implementation is a matter of choice dependent on the performance requirements of the small computing system implementing the invention. Accordingly, the logical operations making up the embodiments of the invention described herein are referred to alternatively as

operations, actions or modules. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Typically, the functionality of program modules may be combined or distributed in various embodiments.

5 The term "user session" directed to a variable interval of time that is determined by how frequently a device is activated and/or an application is selected. When not used frequently enough (as determined by a timeout feature), the device/application is reset to its default state when it is activated/selected.

 The term "interaction" is directed to any tap or gesture with a stylus,
10 operation of a hardware switch and the receipt of data from another device, e.g., a connected PC or an H/PC.

 The term "application" is directed to a specific purpose program that runs on the device, including but not limited to calendar, calculator and shell.

 FIGURE 1 illustrates one embodiment of a suitable operating
15 environment for a small computing device 10 in which the invention may be implemented. The device 10 is only one embodiment of a suitable operating environment and is not intended to suggest any limitation as to the scope of use or functionality of the invention. Other well known computing systems, environments, and/or configurations that may be suitable for use with the invention include, but are
20 not limited to, personal computers, server computers, client computers, laptop devices, multiprocessor devices, microprocessor based systems, programmable consumer electronics, network PCs, minicomputers, mainframe computers, client-server environments, distributed computing environments that include any of the above systems or devices, and the like.

25 FIGURE 1 shows functional components of the small computing device 10. The device 10 includes a processor 12, a memory 16, a touch sensitive display 14, a keyboard 32, a computer readable media device 36 and a switch 38. The memory 16 generally includes both volatile memory (e.g., RAM) and non-volatile memory (e.g., ROM, PC cards, etc.). An operating system 18 is resident in the
30 memory 16 and executes on the processor 12, such as the Windows ® CE or

Windows ® for Pocket PC ® operating systems from the Microsoft ® Corporation. The switch 38 is a manual control for transitioning the device 10 between an on state and an off state.

One or more application programs 20 are loaded into memory 16 and
5 run on the operating system 18. Examples of applications include email programs, scheduling programs, PIM (personal information management) programs, word processing programs, spreadsheet programs, Internet browser programs, and so forth. The small computing device 10 also has a notification manager 22 loaded in memory 16, which executes on the processor 12. The notification manager 22 handles
10 notification requests from the applications 20. The device 10 has a power supply 24, which is implemented as one or more batteries. The power supply 24 might further include an external power source that overrides or recharges the built-in batteries, such as an AC adapter or a powered docking cradle.

The small computing device 10 is also shown with three types of
15 external notification mechanisms: a light emitting diode (LED) 26, a vibration device 28, and an audio generator 30. These devices are directly coupled to the power supply 24 so that when activated, they remain on for a duration dictated by the notification mechanism even though the processor 12 and other components might shut down to conserve power from a battery. The LED 26 preferably remains on
20 from a selectable period of time or until the user takes action. Since the vibration device 28 and the audio generator 30 can consume a large amount of power from a battery, they can be configured to turn off when other components of the small computing device have turned off or at some time interval after activation. Additionally, a bus 34 provides a communication path between the processor 12,
25 display 14, memory 16, LED 26, vibration device 28, audio generator 30, keyboard 32, computer readable media device 36 and the switch 38.

The small computing device 10 may operate with at least some form of computer readable media. Computer readable media can be any available media that can be accessed by the computer readable media device 36. By way of example, and
30 not limitation, computer readable media may comprise computer storage media and

communications media. Computer storage media includes volatile and nonvolatile, removable and non-removable media implemented in any method or technology for storage of information such as computer readable instructions, data structures, program modules, or other data. Computer storage media includes, but is not limited to, random access memory (RAM), read only memory (ROM), electrically erasable programmable read only memory (EEPROM), flash memory or other memory technology, CD-ROM, digital versatile disk (DVD) or other optical storage, magnetic cassettes, magnetic tape, magnetic disk storage or other magnetic storage devices, or any other medium which can be used to store the desired information and which can be accessed by the small computing device 10. Communication media typically embodies computer readable instructions, data structures, program modules or other data in a modulated data signal such as a carrier wave or other transport mechanism and includes any information delivery media. The term "modulated data signal" means a signal that has one or more of its characteristics set or changed in such a manner as to encode information in the signal. By way of example, and not limitation, communication media includes wired media such as a wired network or direct-wired connection, and wireless media such as acoustic, radio frequency (RF), infrared and other wireless media. Combinations of any of the above should also be included within the scope of computer readable media.

FIGURE 2 illustrates a flow chart 100 that shows the actions for one embodiment when a small computing device is turned on. The operation flow begins at a module 102 when a switch for controlling some aspect of the small computing device, e.g., a power switch, is determined to have transitioned from an "off" state to an "on" state. The flow moves to a decision module 104 where a determination is made whether a current user session associated with the switch is over. If the amount of time, since the last switch transition to the "on" state, is found to be less than the predetermined interval of inactivity for the switch's current user session, then the flow moves to a module 106 where applications running on the small computing device will display their last state of the current user session when they are selected. Next, the operation flow moves to an end module and performs other program

operations. Thus, when a switch is transitioned/returned to the “on” state after a relatively short period of time in the “off” state, the selection of an application running on the small computing device will cause the display of the last state in the current user session for the selected application.

5 Alternatively, when the amount time since the last transition to the “on” state is determined to be greater than the predetermined interval of inactivity for the switch’s current user session at the decision module 104, the flow advances to a module 108 where the current user sessions for each of the applications and the switch are terminated, and a new user session is started for the switch. Thus, when
10 an application is selected, the application is displayed in a default state and a new user session is started for the application. The operation flow moves to the end module and performs other program operations. Also, when a predetermined interval of time for any type of interaction with the small computing device expires, i.e., application or switch, the small computing device will automatically turn itself off and the
15 operational flow will perform substantially the same actions as discussed here and above.

 Additionally, the predetermined interval of inactivity for the switch is a relatively large amount of time, e.g., 4 or more hours, that is typically greater than a predetermined interval of inactivity associated with the current user session for any
20 application running on the small computing device. The predetermined interval of inactivity for the switch may be selectable.

 FIGURE 3 illustrates a flow chart 110 that shows the actions for one embodiment when an application running on a small computing device is selected. The operation flow begins at a module 112 when a running application is selected.
25 The flow advances to a decision module 114 where a determination is made whether the current user session associated with the selected application is over. If the amount of time since the last interaction with the selected application is found to be less than a predetermined interval of inactivity associated with the application’s current user session, the flow moves to a module 116 where the last state of the

selected application is displayed on the small computing device. Next, the flow moves to an end module and performs other program operations.

Alternatively, at the decision module 114, when the amount of time since the last interaction with the selected application is found to be greater than a predetermined interval of inactivity associated with the application's current user session, then the flow advances to a module 108 where a new user session is created for the selected application and it is displayed in a default state on the small computing device. The flow then advances to the end module and performs other program operations.

Additionally, it is envisioned that the predetermined interval of inactivity associated with a current user session for an application may be selectable. Typically, the application's predetermined interval of inactivity is an amount of time less than the switch's predetermined interval of inactivity.

FIGURE 4 illustrates a flow chart 118 that shows in greater detail the actions of one embodiment for displaying the default state of an exemplary calendar application. Although the calendar application is described as enabling the default state to be selected from one of two states (day view or agenda view), it is envisioned that other applications running on a small computing device may enable selection of multiple default states.

The operation flow begins at a decision module 120 where a determination is made whether the calendar day view is selected as the default state for the calendar application. If true, the flow moves to a module 124 where the selected day view default state for the calendar application is displayed by the small computing device. Next, the flow returns to calling other program operations.

Alternatively, when the determination at the decision module 120 is false, the flow moves to a module 122 where the agenda view is displayed as the default view for the calendar application by the small computing device. Similarly, the flow returns to calling other program operations.

FIGURE 5 illustrates a flow chart 126 that shows in greater detail the actions of one embodiment to create time stamps for each selection of an application

and each transition of the switch. The operation flow begins at a decision module 128 where a determination is made whether an interaction occurred with either an application running on the small computing device or the switch. If true, the flow advances to a module 130 where a time stamp for the current interaction is created.

5 Depending upon the interaction, the new time stamp will be associated with a current user session for the selected application running on the small computing device or the current user session for the switch. Next, the flow loops back to the decision module 128 where substantially the same actions are performed in a similar manner.

Alternatively, when the determination at the decision module 128 is false, the flow
10 will loop until an interaction occurs with either an application running on the small computing device or the switch.

FIGURE 6 illustrates a flow chart 132 that shows in greater detail the actions of one embodiment for determining whether a new user session should be created for an application running on the small computing device or the switch. The
15 operation flow begins at a decision module 134 where a determination is made whether the difference between the current time and a new time stamp for an interaction with either an application or the switch is greater than a predetermined interval of inactivity associated with the respective application or the switch. If true, the flow advances to a module 136 where a new user session and a new interaction
20 time stamp are created for the respective application or switch.

Next, the flow returns to the decision module 134 and performs substantially the same operations in substantially the same manner discussed above. Alternatively, when the determination at the decision module 134 is found to be false, the flow continues to loop at decision module 134 until the determination is found to
25 be true.

Additionally, it is envisioned that each of the intervals of inactivity associated with a particular application or the switch could be user selectable/editable. It is also envisioned that the connection/disconnection of the small computing device to a docking cradle will not cause a current user session to end.

FIGURE 7 illustrates a table that lists exemplary applications and their respective default states. This table does not provide a complete listing of every application and their respective default state for use with the invention. Instead, the table is intended to generally illustrate how each application running on a small
5 computing device may display a particular default state for a new user session. Also, the default states for different applications such as the Inbox and Contacts can cause any previously configured filters to be reset to a default mode. Further, the shell for the operating system can be configured to display a default state, e.g., a Today view, when its current user session is found to be over.

10 In one embodiment, the length of the interval of inactivity associated with the switch may be automatically adjusted according to the frequency of operation of the switch. When the switch is frequently operated, the invention may increase the length of the interval of inactivity associated with the switch. Similarly, when the switch is not frequently operated, the length of the interval of inactivity may be
15 decreased.

In another embodiment, the invention may be employed as a tool by a separate mechanism for terminating an application to reclaim resources, such as memory or processor resources. After analyzing various characteristics associated with executing applications, this mechanism selects the "best" application to terminate
20 based on a priority value assigned to each application. The priority value for each application is determined by adding together values for multiple characteristics, including average launch time, average memory usage, class or type of application, frequency of usage, amount of stored data and user session.

Since many embodiments of the invention can be made without departing from
25 the spirit and scope of the invention, the invention resides in the claims hereinafter appended.

WE CLAIM:

1. In a computing device, a method for determining a starting point for an application when a new user session is started, comprising the acts of:
 - (a) determining an amount of time since a last interaction with the application;
 - (b) comparing an interval of time to the determined amount of time, the interval of time being associated with a current user session for the application; and
 - (c) when the determined amount of time is greater than the interval of time associated with the current user session for the application, ending the current user session and starting the new user session for the application at the starting point when the application is selected.
2. The method of Claim 1, wherein each application running on the computing device is associated with a separate current user session and a separate interval of time.
3. The method of Claim 1, wherein the interval of time represents a maximum period of inactivity for the selected application.
4. The method of Claim 1, wherein the interval of time is editable for each application.
5. The method of Claim 1, further comprising:
 - (a) when a switch for the computing device is transitioned to an on state, determining an amount of time between a last transition of the switch to an off state and a current transition of the switch to the on state;
 - (b) comparing another interval of time to the determined amount of time, the other interval of time being associated with a current user session for the switch; and
 - (c) when the determined amount of time is greater than the other interval of time associated with the current user session for the switch, ending the current user session for the application and starting a new user session for the switch, whereby a selection of the application will cause a selected view to be displayed on the computing device and the new user session to be started for the selected application.

6. The method of Claim 1, further comprising:

(a) when a switch for the computing device is transitioned to an on state, determining an amount of time between a last automatic transition of the computing device to an off state and a current transition of the switch to the on state;

(b) comparing another interval of time to the determined amount of time, the other interval of time being associated with a current user session for the switch; and

(c) when the determined amount of time is greater than the other interval of time associated with the current user session for the switch, ending the current user session for the application and starting a new user session for the switch, whereby a selection of the application will cause a selected view to be displayed on the computing device and the new user session to be started for the selected application.

7. The method of Claim 5, wherein a length of the other interval of time is automatically adjusted in proportion to a frequency of operation of the switch, including:

(a) increasing the length of the other interval of time when the frequency of the operation of the switch is greater than a defined value; and

(b) decreasing the length of the other interval of time when the frequency of the operation of the switch is less than the defined value.

8. In a small computing device, a method for displaying a selected view when a new user session is started for one of a plurality of applications on the small computing device, comprising the acts of:

(a) determining an amount of time since a last selection of the application;

(b) comparing the determined amount of time for the application to an interval of time that is associated with a current user session for the application;

(c) when the determined amount of time for the application is greater than the interval of time, ending the current user session for the selected application and starting a new user session for the application when the application is selected, wherein the selected view of the selected application is displayed in the new user session;

(d) when a switch for the small computing device is transitioned to an on state, determining another amount of time representing a difference between a last transition of the switch to an off state and a current transition of the switch to the on state;

(e) comparing another interval of time to the other amount of time, the other interval of time being associated with a current user session for the switch; and

(f) when the other amount of time is greater than the other interval of time associated with the current user session for the switch, ending each current user session for each application and starting a new user session for the switch, wherein each selection of any one of the plurality of applications will cause the selected view to be displayed on the small computing device and another new user session to be started for the selected application.

9. The method of Claim 8, further comprising:

(a) generating a time stamp for each interaction with each application, each time stamp being employed to determine the amount of time since the last interaction; and

(b) generating another time stamp for each transition of the switch between the on state and the off state, each other time stamp being employed to determine the amount of time since the last operation of the switch.

10. The method of Claim 8, further comprising:

(a) associating each application with a separate priority value; and

(b) employing each separate priority value to determine when to stop running each application on the small computing device during a period of inactivity.

11. The method of Claim 10, further comprising employing a frequency of interaction with a particular application to dynamically change the priority value associated with the particular application.

12. The method of Claim 10, further comprising:

(a) increasing the priority value associated with the particular application when a high frequency of interaction occurs; and

(b) decreasing the priority value associated with the particular application when a low frequency of interaction occurs.

13. The method of Claim 8, wherein each application is associated with a separate selected view.

14. The method of Claim 13, wherein the selected view is editable for each application.

15. The method of Claim 8, wherein the switch is a power switch for the small computing device.

16. The method of Claim 8, wherein the switch is a function switch for the small computing device.

17. A computer readable medium readable by a computing system and encoding a computer program of instructions for executing a computer process for displaying a default state when a new user session is started for an application on the computing system, comprising:

- (a) determining an amount of time since a last interaction with the application;
- (b) comparing an interval of time to the determined amount of time, the interval of time being associated with a current user session for the application; and
- (c) when the determined amount of time is greater than the interval of time, ending the current user session for the application and starting the new user session for the application when the application is selected, wherein the default state of the application is displayed in the new user session on the computing system.

18. The computer readable medium of Claim 17, further comprising:

- (a) determining when a switch for the computing system is transitioned to an on state, wherein an amount of time is calculated for a difference between a last transition of the switch to an off state and a current transition of the switch to the on state;
- (b) comparing another interval of time to the calculated amount of time, the other interval of time being associated with a current user session for the switch; and
- (c) when the calculated amount of time is greater than the other interval of time associated with the current user session for the switch, ending the current user session for the application and starting a new user session for the switch, wherein a

selection of the application will cause the default state to be displayed on the computing system and the new user session to be started for the selected application.

19. A system for communicating between a client process and a server process in a computing device, comprising:

- (a) the client process performing actions, including:
 - (i) determining an amount of time since a last selection of the application; and
 - (ii) when a switch for the computing device is transitioned to an on state, determining another amount of time representing a difference between a last transition of the switch to an off state and the current transition of the switch to the on state; and
- (b) the server process performing actions, including
 - (i) comparing the determined amount of time for the application to an interval of time that is associated with a current user session for the application;
 - (ii) when the determined amount of time for the application is greater than the interval of time associated with the current session for the application, ending the current user session and starting a new user session for the application when the application is selected, wherein the server process causes a selected view of the selected application to be displayed in the new user session for the selected application;
 - (iii) comparing another interval of time to the other amount of time, the other interval of time being associated with a current user session for the switch; and
 - (iv) when the other amount of time is greater than the other interval of time associated with the current user session for the switch, ending each current user session for each application and starting a new user session for the switch, wherein the server process will cause the selected view to be displayed on the computing device and a separate new user session to be started for a selection of any one of a plurality applications on the computing device.

20. The system of Claim 19, wherein the switch controls the power for the computing device.

Abstract

The invention provides for a method and system for displaying a separate default view for a selected application on a small computing device when a new user session for the selected application is started. Each interaction with each application and a switch are monitored and time stamped. Separate current user sessions are created for each application running on a small computing device. A current user session for a selected application is determined to be over when a maximum interval of inactivity associated with the selected application is less than the amount of time since a last interaction occurred with the selected application. When a current user session is over for a selected application, a new user session for the application is started and a default view for the application is displayed. Additionally, when a switch for controlling the small computing device transitions to an on state after an amount of time greater than another maximum interval of inactivity associated with the switch, each current user session for each application is terminated and a new user session is started for the switch. Further, a new user session is created for each application when it is selected after the new user session is started for the switch. The other maximum interval of inactivity associated with the switch can be automatically changed in proportion to the frequency of switch transitions between the on state and the off state.

20

<p>CERTIFICATE UNDER 37 CFR 1.10:</p> <p>"Express Mail" mailing label number: _____</p> <p>Date of Deposit: _____</p> <p>I hereby certify that this paper or fee is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to BOX PATENT APPLICATION, Assistant Commissioner for Patents, Washington, D.C. 20231.</p> <p>By: _____</p> <p>Name: _____</p>

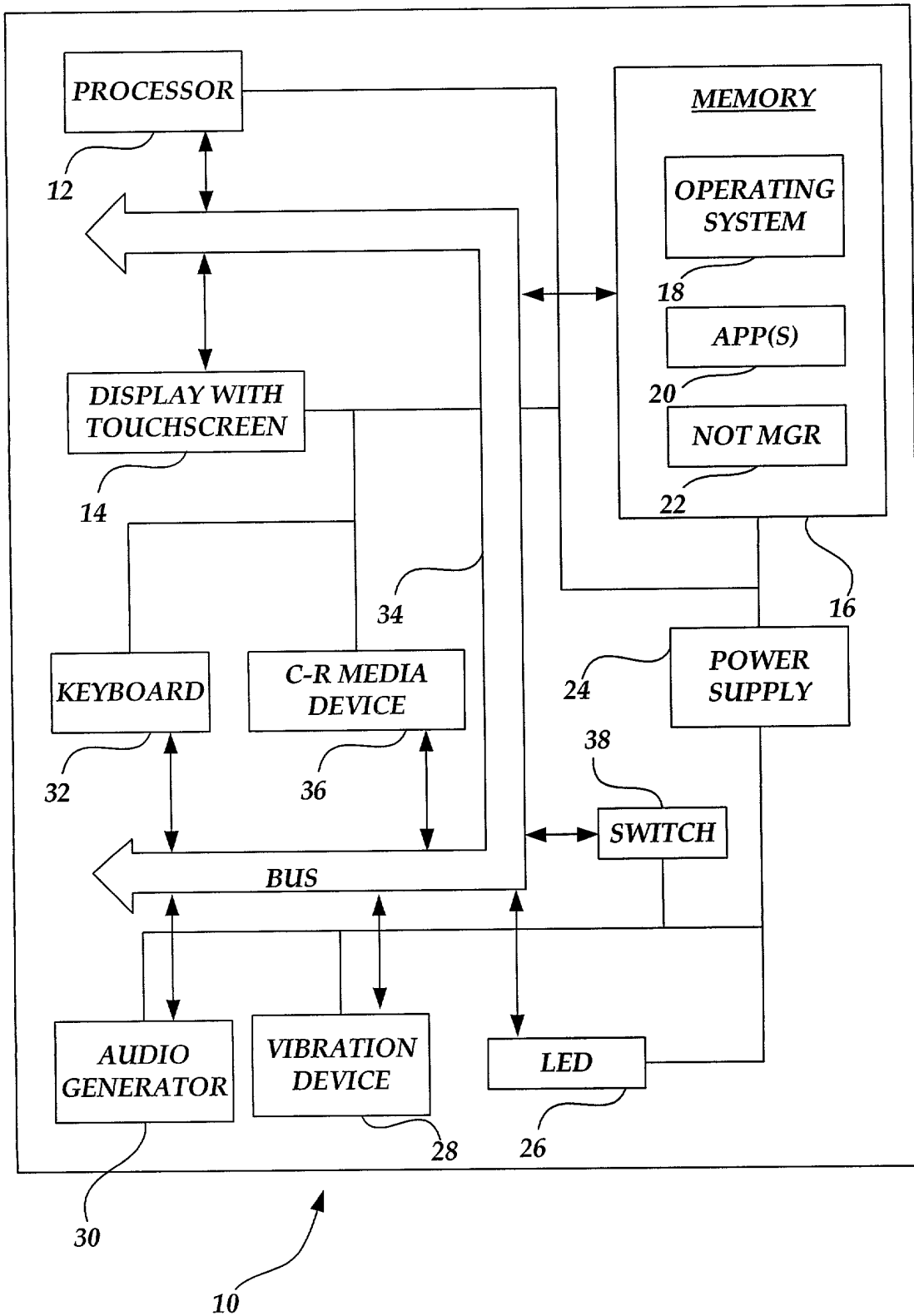
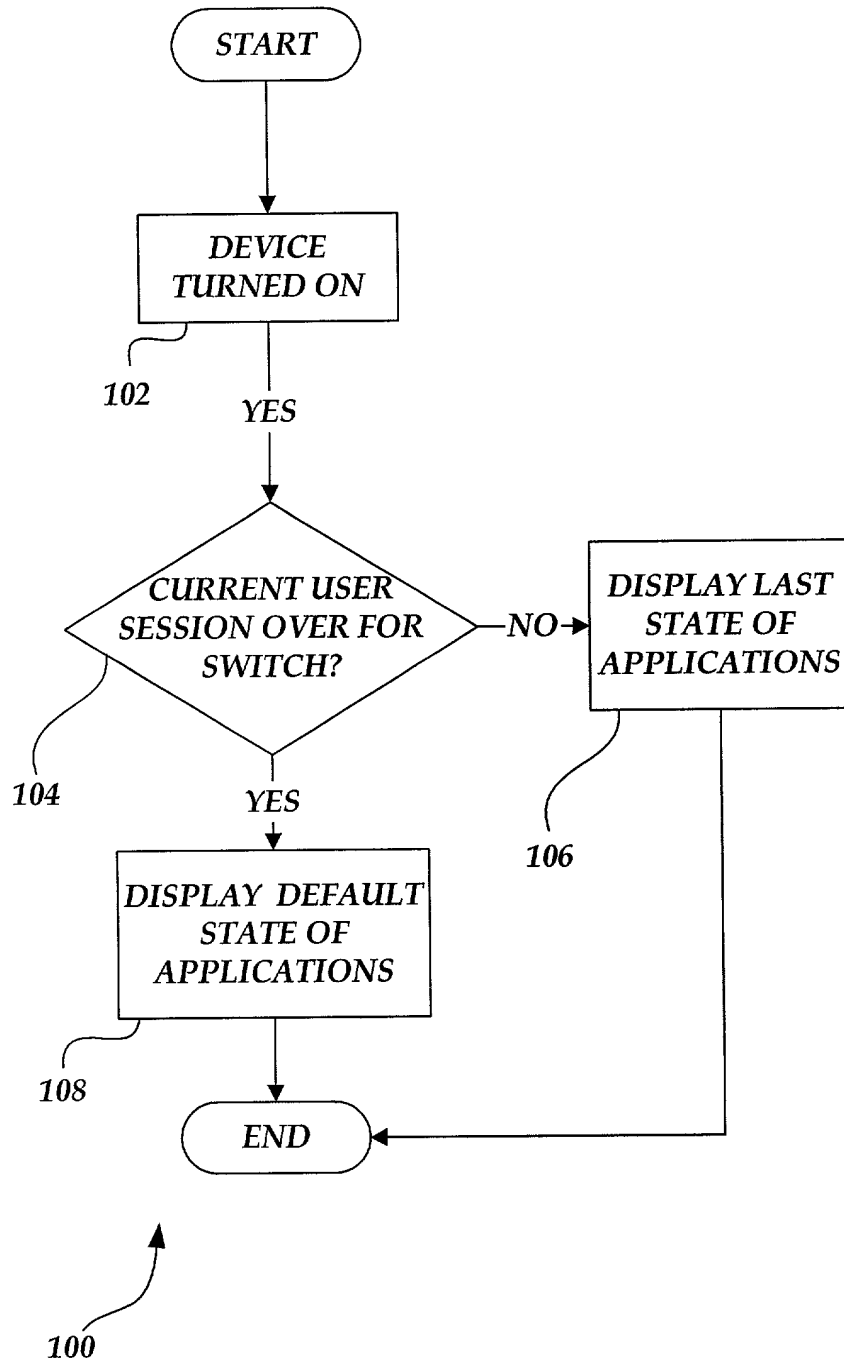
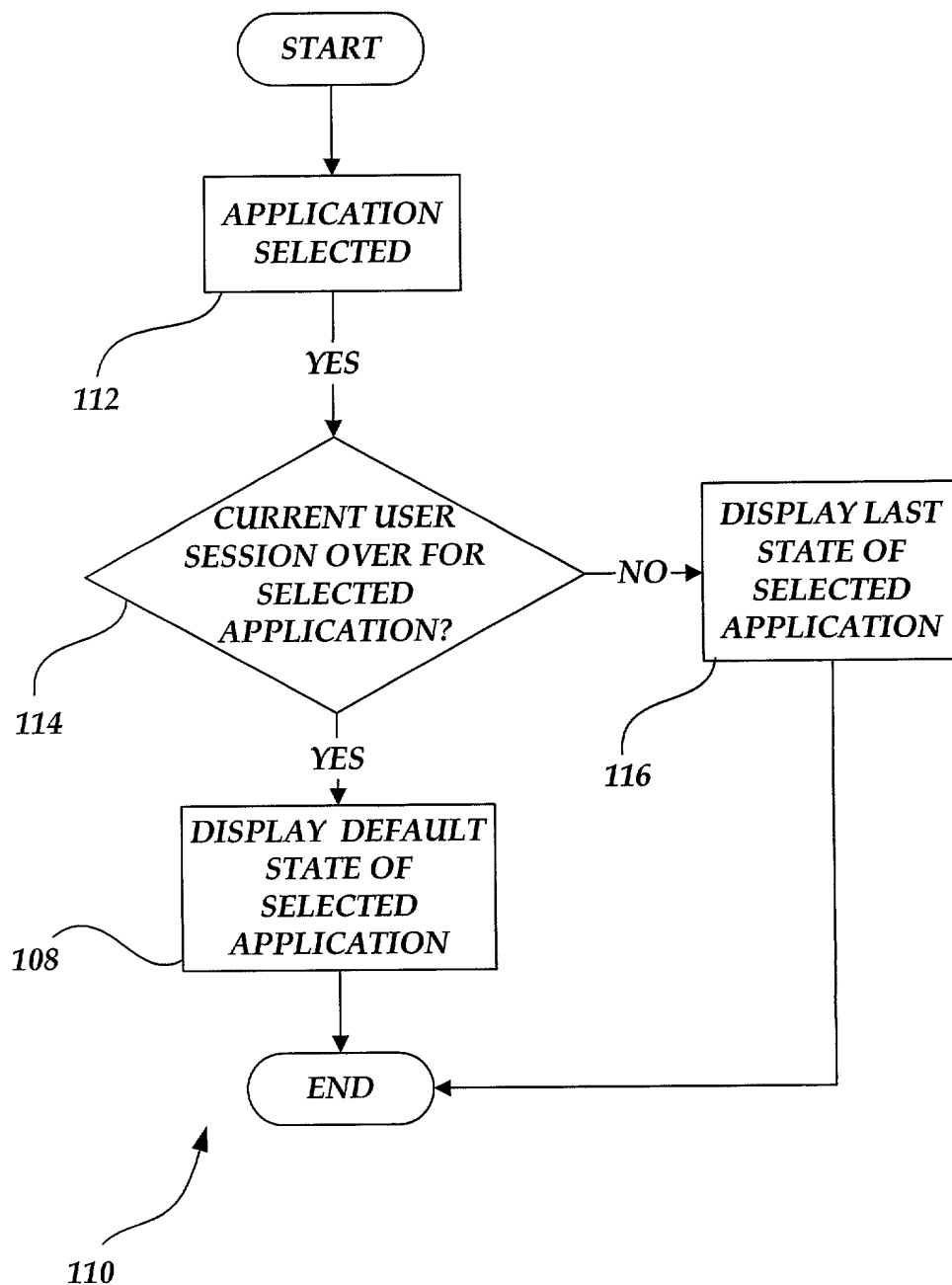
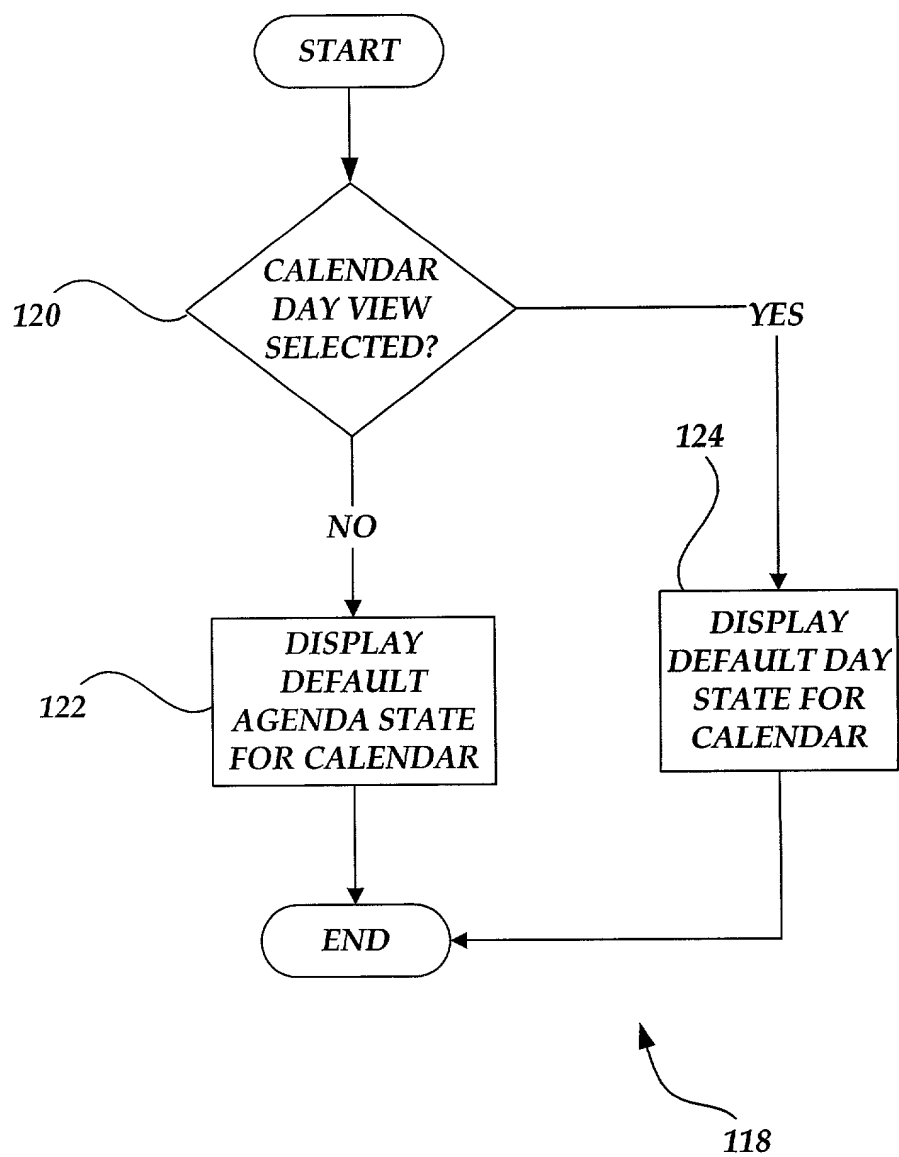


FIG. 1

**FIG. 2**

**FIG. 3**

**FIG. 4**

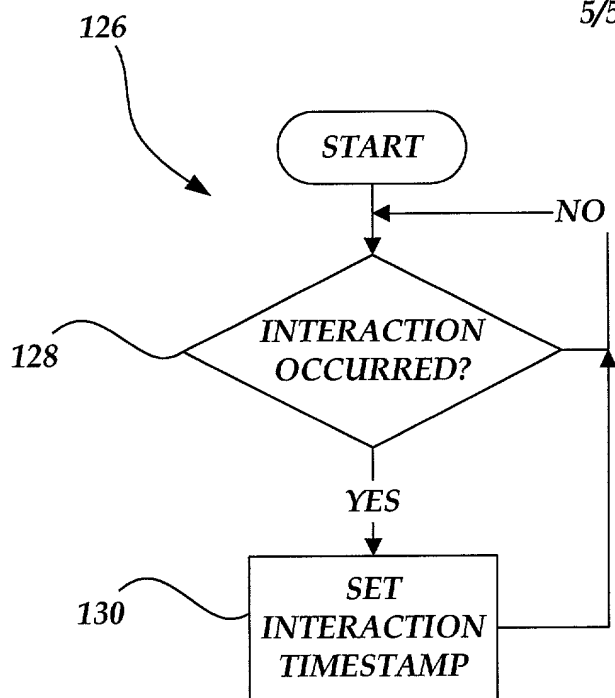


FIG. 5

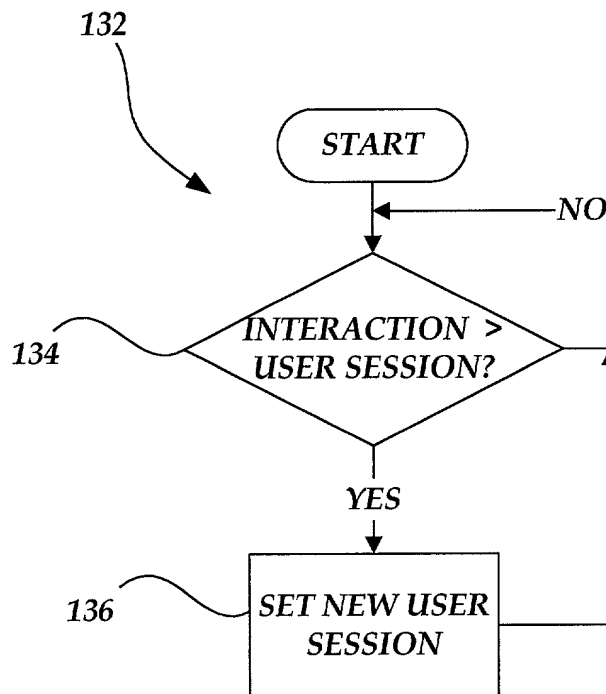


FIG. 6

<u>APPLICATION</u>	<u>DEFAULT STATE(S)</u>
CALENDAR CONTACTS TASKS INBOX NOTES WORD PROCESSOR SPREADSHEET BROWSER MULTI-MEDIA PLAYER FINANCIAL PLANNER ATLAS CALCULATOR READER FILE MANAGER CONNECTIONS SETTINGS GAME SHELL	DAY VIEW OR AGENDA VIEW (SELECTABLE) LIST VIEW SHOWING ALL CONTACTS LIST VIEW SHOWING ALL TASKS INBOX FOLDER VIEW LIST VIEW SHOWING ALL FOLDERS LIST VIEW SHOWING ALL FOLDERS LIST VIEW SHOWING ALL FOLDERS HOME PAGE PLAYER VIEW ACCOUNT MANAGER VIEW ZOOMED OUT DEFAULT MAP (LAST USED) CALCULATOR VIEW WITH 0 SHOWN IN ACCUMULATOR LIBRARY VIEW MY DOCUMENTS FOLDER VIEW CONNECTIONS FOLDER VIEW PERSONAL TAB VIEW NEW GAME VIEW TODAY VIEW

FIG. 7

MERCHANT & GOULD P.C.

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare that my residence, post office address and citizenship are as stated below next to my name; that

I verily believe I am the original, first and sole inventor (if only one name is listed below) or a joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: METHOD AND SYSTEM FOR USER SESSIONS ON PERSONAL ELECTRONIC DEVICES, the specification of which I have reviewed and for which I solicit a United States patent hereto **OR** [filed on _____ and identified in the U.S. Patent and Trademark Office as Serial No. _____.]

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56 (attached hereto).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119/365 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on the basis of which priority is claimed:

- a. ☒ no such applications have been filed.
b. ☐ such applications have been filed as follows:

FOREIGN APPLICATION(S), IF ANY, CLAIMING PRIORITY UNDER 35 USC § 119			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)
ALL FOREIGN APPLICATION(S), IF ANY, FILED BEFORE THE PRIORITY APPLICATION(S)			
COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	DATE OF ISSUE (day, month, year)

I hereby claim the benefit under Title 35, United States Code, § 120/365 of any United States and PCT international application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

I hereby claim the benefit under Title 35, United States Code § 119(e) of any United States provisional application(s) listed below:

U.S. PROVISIONAL APPLICATION NUMBER	DATE OF FILING (Day, Month, Year)

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith:

Albrecht, John W.	Reg. No. 40,481	Lacy, Paul E.	Reg. No. 38,946
Anderson, Gregg I.	Reg. No. 28,828	Larson, James A.	Reg. No. 40,443
Batzli, Brian H.	Reg. No. 32,960	Liepa, Mara E.	Reg. No. 40,066
Beard, John L.	Reg. No. 27,612	Lindquist, Timothy A.	Reg. No. 40,701
Berns, John M.	Reg. No. 43,496	Lycke, Lawrence E.	Reg. No. 38,540
Black, Bruce E.	Reg. No. 41,622	McAuley, Steven A.	Reg. No. P-46,084
Branch, John W.	Reg. No. 41,633	McDonald, Daniel W.	Reg. No. 32,044
Bremer, Dennis C.	Reg. No. 40,528	McIntyre, Jr., William F.	Reg. No. P-44,921
Bruess, Steven C.	Reg. No. 34,130	Mueller, Douglas P.	Reg. No. 30,300
Byrne, Linda M.	Reg. No. 32,404	Pauly, Daniel M.	Reg. No. 40,123
Carlson, Alan G.	Reg. No. 25,959	Phillips, John B.	Reg. No. 37,206
Caspers, Philip P.	Reg. No. 33,227	Plunkett, Theodore	Reg. No. 37,209
Chiapetta, James R.	Reg. No. 39,634	Prendergast, Paul J.	Reg. No. 46,068
Clifford, John A.	Reg. No. 30,247	Pytel, Melissa J.	Reg. No. 41,512
Cochran, William W.	Reg. No. 26,652	Qualey, Terry	Reg. No. 25,148
Daignault, Ronald A.	Reg. No. 25,968	Reich, John C.	Reg. No. 37,703
Daley, Dennis R.	Reg. No. 34,994	Reiland, Earl D.	Reg. No. 25,767
Dalglish, Leslie E.	Reg. No. 40,579	Schmaltz, David G.	Reg. No. 39,828
Daulton, Julie R.	Reg. No. 36,414	Schuman, Mark D.	Reg. No. 31,197
Devries Smith, Katherine M.	Reg. No. 42,157	Schumann, Michael D.	Reg. No. 30,422
DiPietro, Mark J.	Reg. No. 28,707	Scull, Timothy B.	Reg. No. 42,137
Eden, Robert T.	Reg. No. 20,187	Sebald, Gregory A.	Reg. No. 33,280
Epp-Ryan, Sandra	Reg. No. 39,667	Skoog, Mark T.	Reg. No. 40,178
Glance, Robert J.	Reg. No. 40,620	Spellman, Steven J.	Reg. No. 45,124
Goggin, Matthew J.	Reg. No. 44,125	Stoll-DeBell, Kirstin L.	Reg. No. 43,164
Golla, Charles E.	Reg. No. 26,896	Sumner, John P.	Reg. No. 29,114
Gorman, Alan G.	Reg. No. 38,472	Swenson, Erik G.	Reg. No. 45,147
Gould, John D.	Reg. No. 18,223	Tellekson, David K.	Reg. No. 32,314
Gregson, Richard	Reg. No. 41,804	Trembath, Jon R.	Reg. No. 38,344
Gresens, John J.	Reg. No. 33,112	Underhill, Albert L.	Reg. No. 27,403
Hamre, Curtis B.	Reg. No. 29,165	Vandenburgh, J. Derek	Reg. No. 32,179
Hilson, Randall A.	Reg. No. 31,838	Wahl, John R.	Reg. No. 33,044
Holzer, Jr., Richard J.	Reg. No. 42,668	Weaver, Karrie G.	Reg. No. 43,245
Johnston, Scott W.	Reg. No. 39,721	Welter, Paul A.	Reg. No. 20,890
Kachevitch, Natalie D.	Reg. No. 34,196	Whipps, Brian	Reg. No. 43,261
Karjeker, Shaikat	Reg. No. 34,049	Wickhem, J. Scot	Reg. No. 41,376
Kastelic, Joseph M.	Reg. No. 37,160	Williams, Douglas J.	Reg. No. 27,054
Kettelberger, Denise	Reg. No. 33,924	Witt, Jonelle	Reg. No. 41,980
Keys, Jeramie J.	Reg. No. 42,724	Wu, Tong	Reg. No. 43,361
Knearl, Homer L.	Reg. No. 21,197	Xu, Min S.	Reg. No. 39,536
Kowalchyk, Alan W.	Reg. No. 31,535	Zeuli, Anthony R.	Reg. No. P45,255
Kowalchyk, Katherine M.	Reg. No. 36,848		

In addition, I also hereby appoint the following attorneys to prosecute this application and to transact all business in the U.S. Patent and Trademark Office in connection therewith:

Kate E. Sako, Reg. No. 32,628
Daniel D. Crouse, Reg. No. 32,022

I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/firm/organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented unless/until I instruct Merchant & Gould P.C. to the contrary.

Please direct all correspondence in this case to Merchant & Gould P.C. at the address indicated below:



Homer L. Knearl
Merchant & Gould P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
303.357.1633

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2	Full Name Of Inventor	Family Name Chew	First Given Name Chee	Second Given Name H.
0	Residence & Citizenship	City Redmond	State or Foreign Country Washington	Country of Citizenship United States
1	Post Office Address	Post Office Address 2001 178 th Avenue NE	City Redmond	State & Zip Code/Country Washington 98052 / USA
Signature of Inventor 201:			Date:	
2	Full Name Of Inventor	Family Name Parker	First Given Name Kathryn	Second Given Name L.
0	Residence & Citizenship	City Fall City	State or Foreign Country Washington	Country of Citizenship United States
2	Post Office Address	Post Office Address 35539 SE 41 st Street	City Fall City	State & Zip Code/Country Washington 98024 / USA
Signature of Inventor 202:			Date:	
2	Full Name Of Inventor	Family Name Bastiaanse	First Given Name Elizabeth	Second Given Name A.
0	Residence & Citizenship	City Cambridge	State or Foreign Country Massachusetts	Country of Citizenship United States
2	Post Office Address	Post Office Address 929 Massachusetts Avenue, Unit 12A	City Cambridge	State & Zip Code/Country Massachusetts 02139 / USA
Signature of Inventor 203:			Date:	

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud

on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
 - (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.
- (b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and
- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim;
- or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

- (c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:
- (1) Each inventor named in the application;
 - (2) Each attorney or agent who prepares or prosecutes the application; and
 - (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.
- (d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.